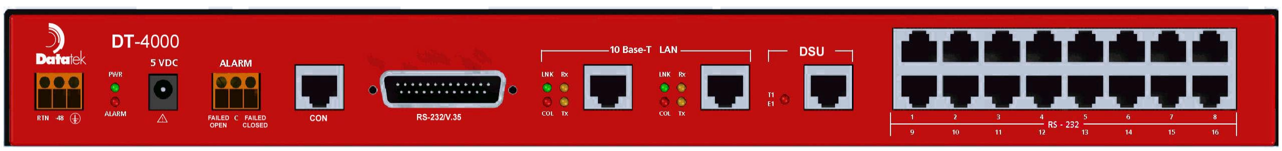
Datatek

DT-SAM
EXTENSIBLE SYNCHRONOUS ASYNCHRONOUS MULTIPLEXOR SOFTWARE FOR THE DT-4000 USER'S MANUAL ADDENDUM



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1 INTRODUCTION

The **DT-SAM** is a software product used to replace the standard firmware of the ***DT-4000***. This document assumes that the reader has familiarity with the ***DT-4000*** User's Manual.

The ***DT-4000*** is a Multiple Protocol Inter-Networking device, which can function as part of either a BNS[1] or an IP infrastructure, or access ***both*** infrastructures ***simultaneously***. It has 16 asynchronous / synchronous / isochronous ports supporting speeds up to 115.2 Kbps (asynchronous) or 56 Kbps (synchronous).

The **DT-SAM** replaces the ***DT-4000*** firmware. The **DT-SAM** operates exclusively in a BNS infrastructure, and may use the IP infrastructure as a BNS trunk in either simplex or duplex configurations. The **DT-SAM** provides for an extension of the BNS SAM created by the ***DT-4000*** to more than 16 ports. This is done by attaching one or more additional **DT-4xxx** devices of any density to the ***DT-4000*** via the GATE ether port. A maximum number of 112 ports are supported using three **DT-4232** devices on a single or duplex BNS trunk.

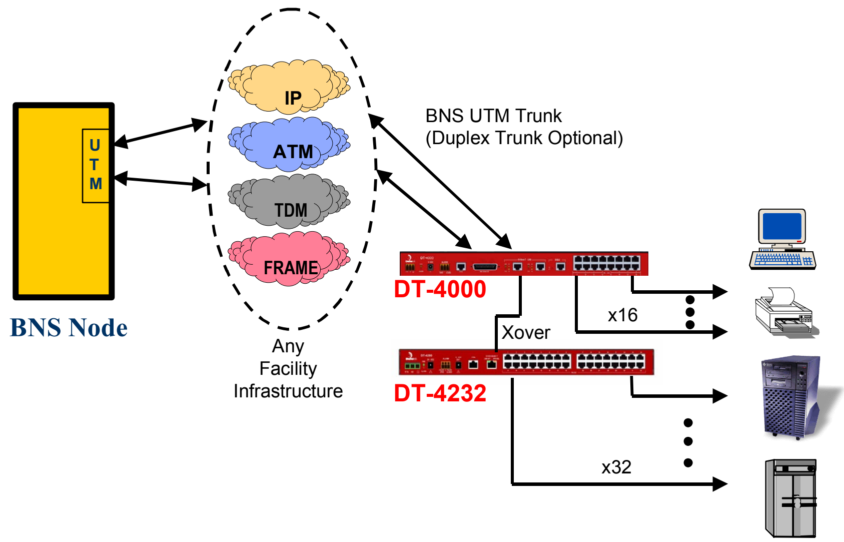
The **DT-SAM** may be used as a drop-in replacement for any density SAM. With 48 ports, it is only 2U in size (i.e. a **DT-4000** and a **DT-4232**), 3U for 80 ports, and 4U in total for 112 ports. The allowed extension units may be a ***DT-4000***, **DT-4216**, **DT-4232**, **DT-4280**, or **DT-4180**. Each extension unit is represented as a SAM "board". Consequently, the **DT-SAM** is a 4 board BNS SAM.

Only base level configuration is performed on the ***DT-4000***, or the **DT-4xxx** extension units. All user port option configuration is performed by the BNS control computer. The **DT-4xxx** extension unit configuration has been reduced to a single command without arguments.

[1] Throughout this user manual the term ***BNS*** encompasses BNS-2000 and BNS-2000 VCS type nodes.

The following is an example of a deployment of 48 ports in total using a **DT-4000** and a **DT-4232**.

DT-SAM 48 Port Deployment

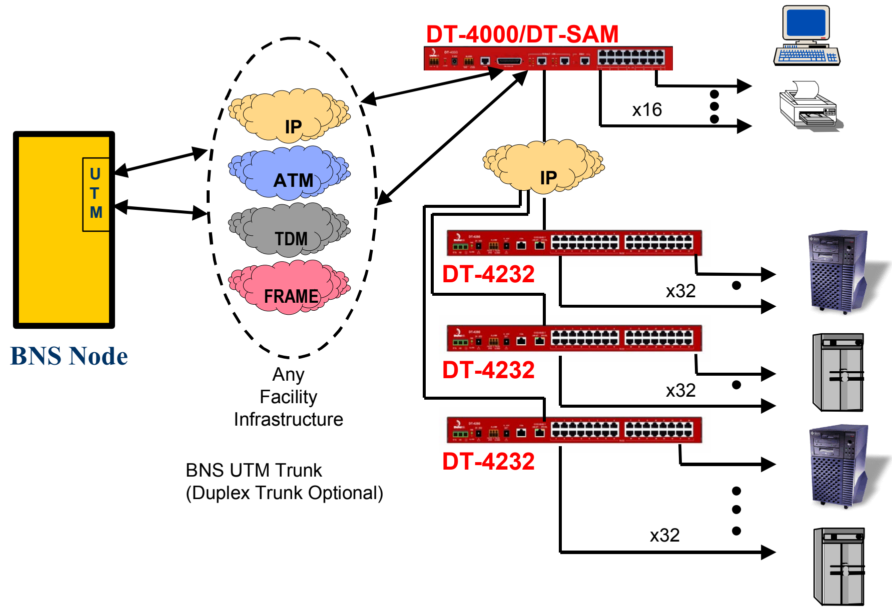


Referring to the diagram above, the ***DT-4000*** connected to a node in the BNS network via a trunk such as the SAMSL or ***Universal Trunk Module***[2]. This allows its 16 ports to communicate with endpoints in the BNS network. At the same time, a **DT-4232** is linked to the **DT-4000** via an ether cross-over cable. The cross-over connection is made to the GATE port on the **DT-4000** and the 10/100 LAN port on the **DT-4232**. The 32 ports on the **DT-4232** are then also able to communicate with endpoints in the BNS network via the **DT-4000** trunk. The trunk may be duplex using multiple network topologies making it resistant to network failures. All of the ports are configured on the BNS control computer. The **DT-4232** does not require special software.

[2] The ***Universal Trunk Module (UTM)*** is a BNS module that allows the customer to employ more cost-effective interconnection facilities between nodes and other BNS product family components. Infrastructures such as IP, ATM or Frame Relay can be used rather than traditional leased-line services.

The following is a deployment example using three DT-4232s and implementing a 112 port DT-SAM.

DT-SAM 112 Port Deployment



Please note that there are no restrictions on the IP network connecting the DT-SAM with the extension units. It may be the same IP network used for BNS trunking purposes; or may be a closed network, or even an etherswitch.

Other configurations possible are as follows:

#Ports (Total)	Primary	Extension(s)
16	DT-4000 (Standard Software)	None
32	DT-4000 (DT-SAM Software)	DT-4000 (Standard Software)
32	DT-4000 (DT-SAM Software)	DT-4216
48	DT-4000 (DT-SAM Software)	DT-4232 or DT-4280
64	DT-4000 (DT-SAM Software)	1 - DT-4232 / DT-4280 plus 1- DT-4000/4180/4216
80	DT-4000 (DT-SAM Software)	2 – DT-4232 / DT-4280
96	DT-4000 (DT-SAM Software)	2 – DT-4232 / DT-4280 plus 1 – DT-4000/4180/4216
112	DT-4000 (DT-SAM Software)	3 – DT-4232/DT-4280

2 CONFIGURATION

2.1 DT-4000 Configuration

The **DT-4000** must be have the **DT-SAM** software installed for configurations of more than 16 ports.The **DT-SAM** software may be field installed, and has a unique software key.

The **DT-4000** must be configured for BNS trunking. All of the Simplex and Duplex trunking interface options are supported in the DT-SAM.
Consult the instructions in the **DT-4000** User's manual.

The User ports on the **DT-4000** with **DT-SAM** installed cannot be configured or verified. These operations are performed from the BNS control computer. The User Ports are only BNS ports. The "port" and "verify port" commands are not supported. The IP-GATE is not supported as it is replaced with the extension board downlink.

The DT-SAM has the following command modifications:

Board <#> [ipaddr=<Extension IP Addr>] [type=<Mod Type>]	Configures the IP network location and type of the extension board. The ***type*** may be 4000, 4180, 4280, 4216, or 4232. The <#> is a numeric in the range of 2 through 4 since board 1 consists of the internal 16 ports.
Dlink [ipaddr=<Link PHY IP Address>] [submask=<Link PHY Mask>] [gateway=<Link PHY Gateway>]	Configures the Downlink PHY. This may be connected to merely a crossover cable or to an entire IP network.
Restore board <#>	Restore command has a new target board to allow a board to be made available to BNS. After connectivity is established, the BNS controller will receive a "board inserted" alarm.
Remove board <#>	Makes a board connection inactive. If connectivity existed, a "board removed" alarm will be received by the BNS controller.

The downlink PHY must be configured prior to any board being restored to service. This involves entering a unique IP address, the appropriate network address mask, and if needed a gateway router IP address.

The board procedure is to configure the extension unit first, then enter the board into the DT-SAM. Restoring the board will make it available to BNS. No port configuration is done on the DT-SAM.

2.2 Extension Configuration

The extension DT-4xxx units are configured for their IP address, network address submask, and gateway router as per their respective user manual.

A configuration command **samext** is available on all of the supported devices. This single command is entered without options. It will require a password for confirmation, and then configure the unit to act as an extension board to the DT-SAM.
Once configured, no further configuration is required. All port configuration is performed by the BNS controller.

2.3 BNS Controller Configuration

The **DT-SAM** is entered into the BNS controller as a SAM504 with four(4) boards, and a trunk type of SAMSL. Please note that the physical BNS trunk module may be either a **UTM** or a SAMSL.

Once the **DT-SAM** is installed, all configuration and service states are made from the BNS controller. The BNS controller will issue an alarm if connectivity is lost with the **DT-SAM** (Trunk Fade), or with any of the extension units (Board Physically Removed). Any version of BNS controller capable of supporting a SAM504 may be used.

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